



AU9732375

(12) PATENT ABRIDGMENT (11) Document No. AU-B-32375/97
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 688255

(Australian Petty Patent)

- (54) Title
FOOD ADDITIVE DEVICE AND METHOD
- (51)^t International Patent Classification(s)
A23C 009/156 A23L 002/56 A23L 002/58 A23L 002/60
A47G 021/18 A61J 015/00
- (21) Application No. : 32375/97 (22) Application Date : 29.07.97
- (30) Priority Data
- (31) Number (32) Date (33) Country
P01298 30.07.96 AU AUSTRALIA
- (43) Publication Date : 05.03.98
- (45) Publication Date of Granted Application : 05.03.98
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- (56) Prior Art Documents
AU 33418/57
AU 27936/63
AU 13584/66
- (57) Claim

1. A device for combining an edible composition with a consumable liquid, the device comprising a tube constructed of plastic and/or polymeric material and having an inner surface coated with the edible composition, wherein consumable liquid drawn through the tube progressively removes the edible composition from the tube.

FOOD ADDITIVE DEVICE AND METHOD

The present invention relates generally to a device and method for combining an edible substance with a consumable liquid. More particularly, the present invention relates to improvements in or relating to such devices and methods. Even more particularly, the present invention relates to a novel device and method for combining an edible substance and a consumable liquid immediately prior to their consumption. Even more particularly the present invention relates to a novel device and method for adding an edible composition comprising a food additive such as flavourings, sweeteners, colourants and the like to a consumable liquid such as milk, water, carbonated beverages and the like.

Although the present invention will be described with reference to combination of a composition comprising an edible composition comprising a food additive with consumable liquids, it is to be noted that the scope of the present invention is not limited to the described embodiment but rather the scope of the invention is more extensive so as to include other arrangements for achieving the same purpose and to the use of the means for purposes other than that described.

Consumers often mix edible compositions comprising food additives with consumable liquids. For example, cordials, which comprise mainly colourants and sweeteners, are often added to still water and carbonated water; flavoured and malted powders are often added to milk and drinking yoghurt; vitamin preparations such as effervescent vitamin tablets are often added to water. Manufacturers also often mix food additives and compositions comprising food additives into their products prior to packaging and sale. Consumable liquids such as milk, water and carbonated beverages such as lemonade, mineral water, tonic water and soda are some of the foods which are often purchased pre-

mixed with food additives.

Food additives include a wide range of chemical species which are usually classified according to their functions, and include, for example flavours, colours, sweeteners, vitamins minerals, antioxidants, gelling agents, stabilisers, emulsifiers, preservatives, modifying agents, mineral salts, food acids, improving agents, acids and bases, humectants and thickeners.

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Perhaps the largest class of food additives are flavours. It is estimated that 1100 to 1400 natural or synthetic flavours are available for inclusion in food. A wide range of colourants are also available and are very popular for addition to food because they can transform a product of bland or unexceptional appearance into a food which has visual impact and immediate consumer appeal.

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The edible compositions comprising food additives which are suitable for mixing with consumable liquids are usually provided to consumers in a liquid or powder form, which is easy to disperse and/or dissolve in the consumable liquids. For example, small quantities of powdered substances such as Milo, Quick or Actavite can be quickly dissolved by stirring in cold milk to change the colour, flavour and sweetness of the milk. (Milo, Quick and Actavite are trade marks.)

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In the past, it has been known to flavour milk using paper drinking straws comprising a core of porous material which is impregnated with flavour and colourant. A consumer would place a drinking straw in milk and draw on the straw such that the milk was pulled through the porous material and impregnated with the flavour and colourant before reaching the mouth of the consumer. One of the problems with this type of device is that the porous material impedes the flow of milk through the straw, hence the

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consumer has to draw very strongly on the straw, or the straw has to be of relatively large diameter for the consumer to maintain an acceptable flow rate of milk into their mouth.

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It is an object of the current invention to provide a novel device for combining an edible composition comprising a food additive and consumable liquid. A further object of the current invention is to provide a novel method for
10 combining an edible composition comprising a food additive and a consumable liquid.

According to the present invention there is provided a device for combining an edible composition with a
15 consumable liquid, the device comprising a tube constructed of plastic and/or polymeric material and having an inner surface coated with the edible composition, wherein consumable liquid drawn through the tube progressively removes the edible composition from the tube.

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In another aspect of the present invention there is provided a method of combining an edible composition with a consumable liquid using the device, comprising placing one end of the tube of the device in a consumable liquid and
25 drawing liquid through the tube such that the edible composition on the inside surface of the tube is progressively removed from the tube.

Typically, the edible composition is progressively removed
30 from the inside surface of the tube by dissolution or dissipated into the consumable liquid as it flows through the tube.

Typically, the edible composition will comprise a food
35 additive. More typically the edible composition will comprise a food additive chosen from the group comprising flavours, colours, sweeteners, nutrients, vitamins,



- minerals, antioxidants, gelling agents, stabilisers, emulsifiers, preservatives, modifying agents, mineral salts, food acids, improving agents, acids, bases, humectants and thickeners and combinations thereof. Even
- 5 more typically the composition will comprise a flavour and/or a colourant as an additive and a consumable liquid drawn past the edible composition on the inside surface of the tube will be imparted with the flavour and/or colour.
- 10 Where the edible composition comprises a natural sweetener as food additive, the natural sweetener is typically chosen from the group comprising sucrose, fructose, glucose, invert sugar, maltose, galactose and lactose. Where the edible composition comprises an artificial sweetener, the
- 15 artificial sweetener is typically chosen from the group comprising glycerol, ethylene glycol, sodium cyclamate, aspartame, dulcin (sucrol) saccharin, ultrasuss, monellin, thaumatin and miraculin.
- 20 Typically the colourant is chosen from any of the many food colourants well known in the art. More typically the colourant will be chosen from the group comprising red colourants such as allura red AC (Chemical Abstracts No. 2956-17-6), amaranth (Chem.Abs.No. 915-67-3), brilliant
- 25 scarlet 4R (Chem.Abs.No. 2611-82-7), carmoisine (Chem.Abs.No. 3567-69-9), chlorazol pink Y (Chem.Abs.No. 2150-33-6), erythrosine (Chem.Abs.No. 568-63-8); orange colourants such as orange GGN (Chem.Abs.No. 2347-72-0); yellow colourants such as sunset yellow FCF (Chem.Abs.No. 2783-94-0), tartrazine (Chem.Abs.No. 1934-21-60), yellow 2G
- 30 (Chem.Abs.No. 6359-98-4); green colourants such as CI acid green 50 (Chem.Abs.No. 3087-16-9); blue colourants such as brilliant blue FCF (Chem.Abs.No. 2650-18-2), indigo carmine (Chem.Abs.No. 860-22-0); violet colourants such as CI acid
- 35 violet 21 (Chem.Abs.No. 5905-37-3); brown colourants such as chocolate brown HT (Chem.Abs.No. 4553-89-3); and black colourants such as brilliant black BN (Chem.Abs.No. 2519-

comprises a flavour and a binder. Typically the flavour imparts a taste which is chosen from the group comprising fruit flavours such as cherry, pineapple, strawberry, mango, orange, banana, blueberry, raspberry and lemon.

- 5 More typically the flavour imparts an alcohol flavour such as rum, whisky, gin, vodka, wine or ouzo flavour. Optionally the edible composition may comprise ethanol.

- 10 When the consumable liquid is a non-milk beverage such as water, mineral water (carbonated and uncarbonated), soda, lemonade and fruit juice, the edible composition typically comprises a flavour, a binder and optionally a vitamin or nutrient and/or mineral salt.

- 15 Typically the edible composition comprises between 0.5 and 80.0 wt% binder and between 0.5 and 99.5 wt% flavour. Even more typically the edible composition comprises between 8.0 and 12.0 wt% binder. Where the edible composition comprises binder, flavour and sweetener, typically the
20 composition is between 0.5 and 20.0% binder, between 0.5 and 80.00 wt% flavour and between 0.1 and 99.5 wt% sweetener.

- The tube of the device may comprise any plastic or
25 polymeric material which is suitable for contact with food and can be placed in the mouth without toxic effects. Typically the tube is at least partly made from an edible material. The tube may be of any convenient length and diameter and may be straight, curled or of any other
30 convenient conformation. The tube may be rigid or flexible and may be able to be bent by the user into different conformations.

- The device of the current invention may be manufactured by
35 any convenient means. For example, the inside surface of the tube may be spray coated with a fine particulate form



of the edible composition or with a liquid and/or solution form of the edible composition which is dried out to provide a dry layer on the inner surface of the tube. Alternatively the tube may be dipped in a liquid and/or solution form of the edible composition such that the inner surface is coated and then the liquid and/or solution coating is dried out to provide a dry layer of edible composition. The outer surface of the tube may be cleaned off or a coating of edible composition permitted to remain on the outer surface as well as the inner surface of the tube.

The present invention will now be described by way of example with reference to the following non-limiting examples;

Example 1

An edible composition was made by mixing 10 wt% starch binder, 1.5 wt% of a chemical which imparts a strawberry flavour, 1.5 wt% brown colourant and 87 wt% fine powdered sugar. The composition was mixed with a small amount of hot water to form a fine slurry. Several plastic drinking straw was repeatedly dipped in the slurry, the outsides of the plastic straws were wiped clean and the straws were then left lying horizontally in a warm place until the slurry had dried out, leaving a layer of the edible composition on the inside of the tubes.

Example 2

An edible composition was made by compounding 50 wt% of freeze dried coffee granules with 50 wt% fine powdered Demerara sugar. The composition was dissolved in a minimum amount of hot water to form a concentrated solution and an air brush apparatus used to spray coat the inside surface of a tube with the hot, concentrated solution. The tube was kept in a warm place until the concentrated solution had dried out, leaving a layer of the edible composition on

the inside of the tube.

Example 3

An edible composition was made by compounding 80 wt% or
5 commercially available chocolate milk flavouring, 10 wt%
fine powdered white sugar and 10 wt% of a composition which
acts as a combined binder and hardener. The edible
composition was dissolved in a minimum amount of hot water
to form a concentrated solution into which plastic drinking
10 straws were repeatedly dipped to coat the inner surface and
outer surface of the straws. The outer surface of each
straws was cleaned and the straws left in a warm place
until the coating on the inner surface had dried out.

15 Example 4

A device manufactured according to the procedure described
in Example 1 was tested for its suitability for use in
milk. One end of the tube of the device was dipped into a
glass of milk and left for several hours. The edible
20 composition was stable over this time period and very
little of the edible composition dissolved from the end of
the tube. A user then drew on the other end of the tube,
causing milk from the glass to rise through the straw,
progressively removing edible composition from the inside
25 of the tube. The user reported that milk was pleasantly
flavoured by the edible composition.

This procedure was repeated using a device manufactured
according to the procedure described in Examples 2 and 3.
30 The results were similar to those reported above.

Example 5

An edible composition was made by mixing 10 wt% starch
binder, 1.5 wt% of a chemical which imparts a cherry
35 flavour, 1.5 wt% red colourant and 87 wt% fine powdered
sugar. The composition was mixed with a small amount of
hot water to form a fine slurry. Several plastic drinking

straw was repeatedly dipped in the slurry, the outsides of the plastic straws were wiped clean and the straws were then left lying horizontally in a warm place until the slurry had dried out, leaving a layer of the edible composition on the inside of the tubes.

One of the devices manufactured according to this procedure was tested for its suitability for use in a carbonated cola beverage. One end of the tube of the device was dipped into a glass of the cola beverage and left for several hours. The edible composition was stable over this time period and very little of the edible composition dissolved from the end of the tube. A user then drew on the other end of the tube, causing cola beverage from the glass to rise through the straw, progressively removing edible composition from the inside of the tube. The user reported that cola beverage was imparted with a cherry flavoured by the edible composition.

Example 6

An edible composition for replenishing body fluid electrolyte balance was made by mixing 10 wt% starch binder, 1.5 wt% of a chemical which imparts an orange flavour, 1.5 wt% orange colourant, 10 wt% mineral salts, 15 wt% ascorbic acid, 2 wt% bicarbonate and balance fine powdered sugar. The composition was mixed and ground to form a fine powder. The inside surface of a plastic drinking straw was spray coated with the powder leaving a layer of the edible composition on the inside of the tube.

One end of the tube was dipped into a glass of water. A user then drew on the other end of the tube, causing water from the glass to rise through the straw, progressively removing edible composition from the inside of the tube. The user reported that water was imparted with a slight effervescence and orange flavour.

ABSTRACT

A device for combining an edible composition with a consumable liquid, the device comprising a tube having an
5 inner surface coated with the edible composition, wherein consumable liquid drawn through the tube progressively removes the edible composition from the tube.